with the authors

HYDATID DISEASE

OF THE

LIVER:

ITS DIAGNOSIS AND TREATMENT.

BY

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ACT FOR THE DEGREE OF M.D.

On 1st day of December, 1880, at 10 a.m.

THESIS: "THAT IT IS ADVISABLE THAT THE ASPIRATOR SHOULD BE FREELY USED AS AN AID TO DIAGNOSIS, AND AS A GUIDE TO FURTHER TREATMENT, IN CERTAIN FORMS OF TUMOUR IN THE HEPATIC REGION."

MORTIMER BALDING, M.B.,
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20th day of November, 1880.

HYDATID DISEASE OF THE LIVER:

ITS DIAGNOSIS AND TREATMENT.

IT is proposed to consider the differential diagnosis of certain forms of tumour in the hepatic region; what amount of aid in their diagnosis can be obtained by the free use of the aspirator; and with what amount of danger this free use is attended.

Uses and Dangers of the Aspirator.

It must be obvious to the most casual observer that the introduction of the aspirator and the withdrawal of only a few drops of fluid will at once exclude many of the conditions below mentioned; but the same cannot be said with reference to the failure to find fluid, for the needle may not have been introduced to a sufficient depth to reach it, or the fluid may be too viscid to pass through the needle even under the exhausting power of the aspirator.

The dangers urged against the aspirator are—

1. That you may give rise to suppuration by the admission of air.
2. That you may cause hæmorrhage by the puncture of a blood-vessel.
3. That in case of malignant disease you only irritate and do harm instead of good.
4. That you may cause sudden death from shock.
5. That you often set up inflammation in the serous sacs.

These objections are, in my opinion, best answered by the following Table, which is a very brief statement of the various purposes and conditions under which the aspirator has been employed by Dieulafoy, from whose work they are extracted.

TABLE I.

	Cases.	Aspirations.	Cures.	Deaths.	REMARKS.
Anal abscesses	7	10	6	...	1 fistula in ano
Metastatic and chronic abscess	15	39	15	...	or doing well
Sanguineous effusion	4	4	4	...	
Hyd-arthrosis of knee	50	120	50	...	No ill-effects
Do. with fract. of patella	1	...	...	...	Suppuration
Bursæ	3	10	3	...	
Hydrocele	5	11	5	...	No accident
Pleurisy	2	...	2	...	
Do.	5	45	5	...	
Pericarditis with effusion	3	3	1	2	
Hydrocephalus	5	46	...	5	Note A
Spina bifida	2	10	2	...	
Ovarian cysts	2	16	1	1	1 cyst mult. loc.
Retention of urine	20	98	...	Many	Note B
Hydatids of liver	7	315	7	...	Urticaria, 2 cases
Abscess of liver	1	2	1	...	
Do.	1	Many	1	...	
Used as stomach-pump	1	...	...	...	Good results
Hernia	30	30	25	5	Note C

A.—All these cases eventually died, but in no instance is there reason to believe that death was accelerated by the use of the aspirator.

B.—No accident; no evidence of any ill-effects from the puncture in any instance. Many of the cases died, but this seemed from other causes. In some cases which were examined after death no peritonitis at the seat of puncture could be detected, and the wound itself was scarcely visible.

C.—20 cases reduced after aspiration alone.
4 cases, herniotomy after aspiration had failed, cured.
3 cases, herniotomy after aspiration had failed, died.
3 cases, sac only aspirated herniotomy, 1 cured, 2 died; in no instance did any accident follow aspiration.

I have myself for some time past been in the habit of frequently using the aspirator, introducing it into the pleural cavity, lung-substance, liver, stomach, intestines, and bladder; and although some surgeons have a strong objection to its introduction into the last-named viscus, I have never seen any ill-effects follow its use.

From the above I am induced to draw the following conclusions :—

1. That it is always possible by means of the aspirator to investigate any supposed collection of fluid.

2. That should your diagnosis not be correct, and you introduce the needle into the substance of the lung, liver, kidney, intestine, aneurism, or cancer, no danger is reasonably to be apprehended, provided the following precautions be observed :—

1. Be sure that your needle is clean and pervious.
2. Introduce it somewhat rapidly and freely in the direction of the supposed collection of fluid.
3. On no account use manipulation.
4. In withdrawing the needle, keep the integument pressed firmly against the subcutaneous structures.

Area of normal Hepatic Dulness.

Before speaking of diseased conditions of the liver, we will indicate by the following Table the normal limits of this organ at those points where its limits are most readily ascertained; of course its entire outline would be approximately indicated by lines connecting the points named.

Table II.

	Above.	Below.	Vertically.
Back	10th–11th verteb	Con. with kidney	
Angle of scapula	9th space or rib	12th rib	4 inches.
Axillary line	7th space or rib	10th space	4 to 5 inches.
Right nipple line	5th space or rib	Costal arch	4 inches.
Median line front	Base of ensiform cartilage.	Midway between ensiform cartilage and umbilicus.	3 to 4 inches.

Left of median line, previous-named limits continued to apex of heart.

Circumstances causing an increased area of Dulness in the Hepatic region.

This increase in area of dulness may be due—

I. To an area of dulness continuous with that of the liver, or to a change in the normal area of dulness without any disease of the liver itself.

A. Cases in which an unusual extent of hepatic surface is in contact with the abdominal or thoracic parietes.

1. Early life.
2. Congenital malformations and displacements.
3. Rickets.
4. Changes due to tight lacing.

B. To a tumour or collection of fluid in the vicinity of the liver, producing an area of dulness continuous with that of the liver; the principal of which are—

1. Diseases of the organs of the chest:
   - Pleurisy with effusion.
   - Empyæma.
   - Hydatids.
   - Aneurism.
   - Consolidated lung, and mediastinal tumours.
   - Pericarditis with effusion.
2. Tumours, or collections of fluid between the liver and diaphragm.
3. Abnormal conditions of abdominal viscera and parietes:
   - Collections of fluid in abdominal wall.
   - Aneurism.
   - Malignant disease in the region of the liver.
   - Fæces in colon.
   - Diseases of gall-bladder.
   - Hydatid, cystic, or malignant disease of kidney.

II. To an increased area of hepatic dulness, due to a diseased condition of that organ.

A. Those conditions in which the liver is enlarged, but the surface remains more or less smooth, and is not nodulated or lobular.

1. Amyloid liver.

2. Fatty liver.
3. Simple hypertrophy of liver.
4. Congestion of liver.
5. Interstitial hepatitis in all its forms.
6. Catarrh of bile-ducts, and other causes producing obstruction and retention of bile.

As it is only proposed to consider certain forms of tumour, the above Sub-class A will not fall within the limits of this paper.

B. Those diseases of the liver in which the surface is more or less lobulated or nodular.

1. Simple cyst.
2. Pyæmic abscess of the liver.
3. Tropical abscess of the liver.
4. Malignant disease in all its varieties.
5. Hydatid disease of the liver.

It is to this last Sub-class B, and more especially to the last-named disease, that this paper is specially devoted.

Class I.—APPARENT HEPATIC ENLARGEMENTS.

A, 1–4.—Such conditions of liver as are due to early life, congenital malformations and displacements, and rickets, must be diagnosed chiefly by the history of the case, and from their long duration without producing any marked change in the condition of the patient or any confirmatory evidence of hepatic disease.

Displacements of the whole or a portion of the liver by tight lacing must be diagnosed by the fact that it is most common in females. A distinct furrow in the liver-substance may sometimes be felt in those who habitually accustom themselves to a small waist, and, as in a case mentioned in this paper, lace off a portion of the liver-substance; this condition being accompanied by absence of marked evidence of hepatic disease.

B, 1.—The diagnosis of hydatid disease of the lungs, as also that disease of the kidneys, will be considered with the same disease in the liver. In diagnosing the cases of this group, careful attention must in the first place be given to the history of the case. The amount of dyspnœa is generally much greater, in proportion to the amount of the dulness, if the disease is of pulmonary origin than if its primary seat is in the liver and it only bulges into the thorax. The history of previous pain, and expectoration with its character, must also be taken into account.

Mediastinal tumours may be suspected from their seat of origin, the pressure-signs they give rise to, and their chronicity; aneurism, by its bruit, pulsation, pain, and dyspnœa.

The greatest difficulty will arise with regard to pleurisy and empyema: in the former the upper margin of dulness is generally horizontal, and often varies with the position of the patient, in addition to which the bulging of the intercostal spaces is more general in pleurisy than in hydatid disease where it is more local; on the other hand, empyema is more likely to become circumscribed. The use of the aspirator would at once decide, by the character of the fluid withdrawn, the diagnosis between the two.

Dilated heart and pericarditis with effusion would be suspected chiefly from the history of the case and the seat; but it must be remembered that the diagnosis between the two is not always easy, as was shown by a case lately recorded in which a dilated heart was punctured by mistake, not only without harm, but with relief to the patient.

B, 2.—Bright and Murchison both mention cases of circumscribed peritoneal effusion between the liver and the diaphragm, but consider the diagnosis of such cases during life as almost impossible.

B, 3.—Collections of fluid in the abdominal parietes in the region of the liver present many points of resemblance to collections of fluid in the liver itself, as the following cases will show; but a careful attention to the history of the case and the absence of evidence of hepatic disease will materially assist in the diagnosis, and also noting accurately the most prominent point of the tumour, as well as the character of the fluid withdrawn as shown by chemical and microscopical examination.

CASE I.

A. D., aged 6, *admitted Nov.* 16, 1874.

History.—Family history good. Has always been a strong, healthy child; but about two years ago had a fall from a wall, about eight feet in height, upon his abdomen, after which he complained of abdominal pain for a day or two; but has since been quite well till about two months ago, when his mother noticed that his body was enlarging.

State on admission.—In right epigastric region is a prominence, dull on percussion, commencing at umbilicus, and, extending upwards, becomes continuous with that of the liver, which reaches to the fifth costal cartilage; it measures five inches in its transverse diameter, and the same in its vertical. In the right nipple line the dulness does not extend below the costal cartilage; its most prominent point is to the left of the median line, but the dulness is not continuous with that of the spleen. A distinct thrill can be felt on percussion. It causes no pain, and attention was only directed to it by his clothes becoming too tight. The superficial veins are slightly prominent over the tumour. Apex of heart between fifth and sixth ribs. No evidence of ascites. Girth over most prominent part of tumour twenty-six and a half inches; right side, thirteen and a half inches; left side, thirteen inches.

Nov. 21.—Tumour punctured with the aspirator; about two ounces of rather thick ochre-coloured fluid and a large quantity of gas withdrawn. Fluid alkaline 1012, containing a large quantity of albumen; no trace of bile, hooklets, or echinocci could be found.

Discharged Dec. 14, 1874; tumour much less.

Re-admitted March 1, 1875, in a similar condition to the above.

Tumour aspirated. Twenty-seven ounces of similar fluid withdrawn.

April 18.—Ten ounces of similar fluid withdrawn by aspirator.

April 24.—Tumour again filled, and it was proposed to aspirate it again the following morning; but while taking his usual exercise he fell down in the hospital garden, upon his abdomen, and immediately complained of intense pain in abdomen. Seen half-an-hour after the accident. No tumour to be felt; pulse 130; temperature 102; respiration 36; bathed in a cold sweat; patient kept quiet in bed.

April 28.—Patient feeling quite well; no tumour to be felt; pulse and temperature normal: was discharged.

May 25, 1878.—Patient quite well; no tumour to be felt.

CASE II.

E. A. I., aged 19, *admitted June* 2, 1873.

History.—Mother alive, but belongs to a phthisical family; had the usual diseases of childhood. In August, 1871, suffered from pain in back and loins, accompanied by slight yellowness of skin, shortness of breath, and night-sweats, and, for a time, emaciation. He recovered from this, and gained flesh, and continued well till September, 1872, when he had a return of his old symptoms for a time—he thinks about a fortnight—after which he continued well till his present illness. In April, 1873, he noticed a small, hard swelling just between the right hypochondriac and epigastric regions, which has been steadily increasing up to the present time, without giving any pain, redness, or throbbing. No history of injury.

State on admission.—No evidence of disease in any of the thoracic organs. Hepatic dulness begins one inch and a half below nipple, and extends downwards for six inches, being one inch below cartilages of ribs. At the inner and lower border of the ribs, on the right side, is a globular protuberance, measuring three inches in diameter; it does not extend beyond the median line, is elastic, but not red or tender. On relaxing the abdominal muscles, a fair grasp of the tumour may be obtained, and doubtful fluctuation felt. There appears to be some slight thickening of the superficial structures over the cartilages of the lower ribs; but at the outer border of the tumour the finger can to some extent be passed between it and the ribs. The tumour causes no pain. Tongue slightly creamy; bowels open regularly; no jaundice; urine 1025, acid; no albumen.

June 2.—A small trocar was passed into the tumour to a distance of two inches in an upward and backward direction. About two and a half ounces of healthy pus escaped; no cysts, hooklets, or laminated membrane, or trace of bile could be detected. A probe could be passed through the canula to a depth of three inches. Canula retained in the wound till June 9, when, the discharge becoming much less, it was withdrawn, and in a few days the wound closed.

June 21.—The tumour, which had again become tense and slightly painful, burst at the seat of the former puncture. There was a free discharge for a few days, and the cavity was washed out daily with a solution of carbolic acid; the amount of discharge daily decreased, and the wound closed.

August 18.—Discharged convalescent.

Case III.

M. A. K., aged 55, *admitted May* 3, 1873.

History.—About six weeks before admission, whilst lifting a heavy bed, was suddenly seized with pain in right iliac fossa; after which she noticed a swelling in that region, corresponding to the seat of pain, which has since increased, and for the last month has compelled her to keep her bed. She states that at one time she was very thin, but has become much stouter the last two or three years.

State on admission.—In right iliac fossa is a tumour the size of a fœtal head, the skin over which is red and tender. Fluctuation can be distinctly felt over the tumour. From its upper margin there is a dull area, five inches in width, extending upwards, to become continuous with the dulness of the liver, towards which it becomes rather wider. In other directions the hepatic dulness is normal. Extensive œdema of both legs.

May 3.—Tumour punctured by aspirator, and twenty ounces of fœtid pus removed. Patient died May 5.

Post mortem.—A large abscess was found in the abdominal wall in the right iliac region. The lower margins of the ribs were thrust inwards, causing a deep furrow in the liver-substance, and the dull band spoken of above was found to have no connection whatever with the tumour, but to be due to a portion of the liver which had become almost severed from the bulk of the gland, it only being connected by a pedicle.

I may also mention two other cases that have come under my observation of superficial collections of fluid over the liver.

One was a case of a bursa over one of the lower ribs, and the other of necrosis of the rib in the same region. The diagnosis was in both instances easy, from the fact that the most prominent part of the tumour was over the rib, and not over the intercostal space, and also from the history of the cases, or rather the occupation of the patients; the one with the bursa being a packman, the corner of whose pack was always rubbing against the point in question; the other patient was a joiner, who stated that from the time he first commenced his trade he generally struck his side, at the point in question, whilst using a plane; and I expect that a similar history would generally be found in these and similar cases to aid in their diagnosis.

Aneurism of the abdominal aorta or its branches, of sufficient size to be diagnosed during life, would be accompanied by the general signs of aneurism, such as pain, often severe and paroxysmal, tumour, frequently fusiform in shape, over which a bruit can generally be heard and pulsation felt in all directions; but it must be borne in mind that some cases of rapidly growing malignant disease are so vascular as to give rise to fluctuation, bruit, and pulsation. I am unable to find any record of an aneurism of the hepatic artery being diagnosed during life.

Malignant disease in the region of the liver would give rise to symptoms similar to those which will be mentioned when speaking of that disease in the liver itself.

Care must be taken, in all these cases, that you are not misled by an accumulation of fæces in the colon; but careful attention to and regulation of the bowels will generally decide this point.

Enlargements of the gall-bladder may be a source of difficulty in diagnosis, and must always be taken into account when the area of hepatic dulness is increased in this direction. It may be due to simple accumulation of bile from obstruction, suppuration, dropsy, accumulation of gall-stones, or cancer. In the first the fluctuating tumour in the region of the gall-bladder is accompanied by jaundice, absence of bile from the motions, and general enlargement and tenderness of the liver. In the second there is often a history of gall-stones; there is no jaundice, bile is present in the motions, no general enlargement of the liver; there is pyrexia, generally rigors and night-sweats. The third is a chronic catarrhal condition which has not gone on to suppuration, and is very likely to be confounded with hydatid disease till a portion of the fluid is drawn off. The fourth is of extremely slow growth, very hard but more or less movable, and gall-stones may often be felt to move on each other. In the last the tumour is more fixed, and more or less painful; it is generally accompanied by vomiting, progressive emaciation, and is more rapid in its growth; it may be primary, but is more often secondary.

The principal diseases of the kidney that are likely to cause a difficulty in diagnosis are hydatids of the kidney, cancer of the kidney, hydro-nephrosis, pyo-nephrosis, and cystic disease of the kidney, in all of which it will be found that the dulness extends quite back to the lumbar region, and that there is no resonance between the dull area and the spine, and that the colon is in front of the tumour in question. The state of the urine should be carefully examined and enquired into, as in case there is any communication between the tumour and the ureter the whole or a portion of the contents of the tumour is sometimes voided periodically with the urine. The previous history of any renal affection, such as hæmaturia or calculus, would afford strong evidence of renal origin. All the above, with perhaps the exception of cancer, would give rise to a sense of obscure fluctuation ; and in the latter the age of the patient would be some guide, as nearly one-third of the recorded cases were under five years of age. Its surface is generally indurated, the tumour itself fixed, and often accompanied by hæmaturia. Cystic disease of the kidney rarely attains to sufficient size to be diagnosed during life ; but there are cases of its attaining to a considerable size in a third kidney, and the urine presenting no abnormal characters, Hydro-nephrosis is often congenital, and may be accompanied by other malformations, and its chief inconvenience is from its bulk. The withdrawal of the whole or a portion of its contents by the aspirator would decide the diagnosis, and avoid risk of rupture.

Class II.—TRUE HEPATIC ENLARGEMENTS.

A.—Not within the limits of the present paper.

B 1. *Simple Cyst.*—I am unable to find any record of a case of simple cyst of the liver being diagnosed during life.

B 2. *Pyæmic Abscess.*—The enlargement of the liver, although considerable, is not generally very great, and its surface is less nodular than in cancer, and there is not as a rule a feeling of fluctuation. Pain and tenderness are always present, and are markedly increased on deep inspiration. Jaundice is present in about four-fifths of the cases. Impediment to portal circulation, enlargement of the veins of the abdomen, and ascites are rare ; but the spleen is generally enlarged. Pyrexia is always present, and varies much in its intensity at different times in the same case.

Rigors are usually present, and vary much in their intensity and in the intervals between them, and the oscillations of temperature are very sudden; profuse perspirations are generally present; emaciation is progressive, and diarrhœa common. Dry brown tongue and delirium generally end the case. The disease rarely lasts more than six months, but, according to the late Mr. De Morgan, it may last a year or more.

There must exist in the patient some source from which the putrefactive products of suppuration can be absorbed into the system, but it is not requisite that this should have direct communication with the exterior of the body.

B 3. *Tropical Abscess.*—Under the above head I include those cases of abscess of the liver which are generally of large size and single. There may, however, in rare cases be two or three, but they are never numerous and are of an idiopathic origin, having no connection with pyæmia, or, in other words, with small multiple abscess of the liver. The symptoms of this disease may be divided into those which take place before suppuration, and those which take place after suppuration.

Before suppuration.—During the first week or ten days the symptoms are mainly those of congestion of the liver, which yet has a smooth surface and is enlarged in all directions. There is remittent pyrexia, with a feeling of weight and oppression in the region of the liver. There is frequently slight jaundice, nausea, headache, dyspnœa, and dirty tongue, but no very acute pain ; the urine is scanty, and loaded with urates, and often the earliest indication that you have incipient tropical abscess to deal with, and not malaria, is obtained from the fact that the case does not yield to quinine. The whole of the symptoms may, however, recede from this stage without going on to suppuration.

After suppuration.—The enlargement of the liver is no longer uniform, but the natural outline is changed by the projection of a smooth globular mass, in which fluctuation, more or less distinct, can generally be made out; and this obscurely fluctuating region is surrounded by a more or less well-marked hard indurated zone; if, however, the abscess is very deep, the sense of fluctuation may be wanting. The pain and tenderness are not generally very acute, but become more so as the pus approaches the surface. Ascites, enlargement of the spleen, and œdema of the lower limbs are not prominent symptoms, and jaundice is not generally persistent. Pyrexia is present at some period of the twenty-four hours. Rigors and profuse perspirations are not so well marked as in pyæmic abscess. There is generally loss of appetite, accompanied by obstinate vomiting, and a coated or red tongue.

The duration of the disease, before coming to a climax, may vary from two to three weeks to many months; and this is probably the explanation of the cases of this disease seen in this country. It is most common in India or China; rare in the West Indies; and generally occurs between the ages of 25 and 45, in persons of indolent habits, who either eat or drink to excess.

CASE I.

The following case was in the Middlesex Hospital, under the care of the late Dr. Murchison, while I was a pupil of that institution:—

F. K., aged 39, *admitted Jan.* 5, 1871.

History.—He left Japan about sixteen months ago, and went to Madras; and while there he acknowledges that he was a free drinker, especially of gin. He landed in England in July, 1870. His health continued good for the first three months. He never had dysentery in India. In October, 1870, he noticed that he was losing flesh, and that his appetite was failing. For some weeks past he has suffered from night-sweats, and a month ago was obliged to give up work. About this time he noticed a swelling in the right hypochondriac region, which has since increased.

State on admission.—Patient is considerably emaciated, and complains of great weakness and loss of appetite. No cough.

Pulse 80. Temperature slightly raised. Auscultation and percussion show the thoracic organs to be fairly healthy. Lower ribs on the right side slightly everted, and hypochondriac region prominent. Hepatic dulness in the right nipple-line five and a half inches. Upper limit normal. Projecting from the lower surface of the liver, in the right epigastric and hypochondriac regions, can be felt a smooth elastic tumour, the size of a cocoa-nut; it is slightly tender, but gives no vibration. No jaundice. Bowels regular. Urine 1030, acid. No albumen.

Jan. 9.—Is weaker, and has more pain in tumour, which is enlarging. No rigors. Sweats profusely at night. Temperature 99° in the morning, and 103° in the evening. An exploratory trocar introduced into the tumour, which gave exit to pus. A large trocar was then introduced, and 30 ounces of brick-red pus let out. Cavity washed out with a solution of chloride of zinc, and canula retained in position. Wound dressed with carbolic oil. For some days after the operation the patient was much better, the night-sweats greatly decreased, and the temperature almost normal. After several days, the temperature again rising, the canula was withdrawn, and several ounces of dirty, but not offensive, pus escaped. A drainage-tube was now substituted for the canula, and the cavity washed out daily.

Jan. 18.—The drainage-tube appears to give a better exit to the pus than the canula, and the patient expresses himself as better. Pulse and temperature lower, and he takes his food fairly well.

Jan. 20.—Discharge slightly offensive for the first time.

Jan. 22.—Appetite not so good. Night-sweats and diarrhœa.

Jan. 24.—Discharge contains bile. Tube removed, and the wound kept open by lint. From this time the patient gradually lost ground; rigors and profuse night-sweats returned, accompanied by loss of appetite and troublesome diarrhœa.

He died on Feb. 4.

Post-mortem.—Extreme emaciation. On opening the thorax, the left lung was found to be adherent over a considerable extent, and there was a small quantity of fluid in the right pleura. Lungs otherwise healthy; walls of heart thin and flabby; liver extensively adherent to diaphragm and to abdominal wall for about two inches around the seat of puncture. The cavity, which was bounded by a well-marked wall of fibrous tissue, would not now contain more than 16 ounces. Scattered throughout the liver were several small abscesses, without any well-defined wall. The intestine, which was carefully examined, presented no trace of ulceration or of old cicatrix. The mucous membrane was in some places rather congested, but no source of purulent infection could be found.

B. 4. *Cancer of the Liver.*—In this disease the enlargement is generally very great, and may be as much as seven times its normal weight; but it should be remembered that we somtimes find cancer in an already contracted liver. The onset of the disease is very insidious. The enlargement generally takes the form of nodules of various sizes scattered over its surface and throughout its substance, so that the surface is uneven and the nodule itself is often depressed in the centre. Rarely there is an obscure sense of fluctuation.

There is generally more or less pain, often severe and lancinating in character. Jaundice is generally present, and having once appeared never disappears. The temperature is normal, unless you have complications, and emaciation is progressive. Vomiting is a most troublesome feature in most cases. Ascites generally comes on towards the termination of the case, but not to any great amount. The superficial veins of the abdomen are not generally enlarged.

The early symptoms are those of deranged digestion, such as nausea, loss of appetite, vomiting, creamy tongue, constipation, and progressive emaciation.

It is often, and according to some authorities always, secondary to malignant disease of other organs, and it rarely lasts over a year from its first giving rise to marked symptoms.

Its diagnosis is aided by the circumstances under which it occurs. It is rare under thirty-five years of age. We often find a history of malignant disease in other members of the family; and here, as in malignant disease of other organs, it is by no means an uncommon feature to find a history of marked longevity in the ancestors and an unusually good previous history of the patient himself.

B. 5. *Hydatid Disease.*—Having thus briefly considered those conditions which are most likely to embarrass the diagnosis, we will now pass to the consideration of the disease of the liver and its surrounding organs in which the aspirator is likely to be of the greatest use, namely, hydatid disease.

The leading characters of hydatids of the liver are—

The enlargement of the liver is painless at least in its early stages, the patient not being aware that he has any tumour in the hepatic region, or only having his attention directed to it by a feeling of weight there; hence it may attain to a considerable size before it is brought under notice.

The outline of the liver is changed, there being usually more or less protrusion either into the thorax or abdomen or a bulging of the lower ribs. The tumour is not hard, but elastic, often giving a sense of obscure fluctuation; and there is frequently hydatid thrill on percussion.

The surface of the tumour is smooth, but in some instances it may become lobulated.

Œdema of the feet and legs, with enlargement of the superficial veins of abdomen, is not usual in this disease; and the spleen is rarely enlarged.

Jaundice is rare, unless the tumour presses on the fissure of the liver.

It is rare for hydatids to give rise to renal derangements, unless they originate in the kidney, or rupture into that organ, or cause albuminuria by pressure. Their growth is generally very slow, and hence they may exist for years.

A hydatid cyst may attain to enormous size without attracting attention, but sometimes a small tumour will cause pain.

Constitutional symptoms are generally conspicuous by their absence, there being, as a rule, no pyrexia or derangement of the digestive functions. Cough is sometimes present in hydatids of the liver, and it is a prominent symptom when the disease originates in the lung.

Hydatid cyst of the liver may be confounded with most of the conditions already mentioned, and may even attain to such a size as to be confused with ovarian cyst.

Should it have its primary origin in the liver and extend through the diaphragm into the lung, and come in contact with the thoracic wall, in addition to the cough already mentioned, we have the line of demarcation from absolute dulness with absence of breathing to normal percussion and respiration very abrupt indeed: if originating in the lung and located, as it often is, in the infra-clavicular region, it frequently gives rise to symptoms closely resembling those of phthisis. If it originates in the kidney, and it attains to a great size before it is seen, its diagnosis may be very difficult.

But in most instances the nature, if not the seat, of the tumour may be set at rest by a puncture, and the withdrawal of the whole or a portion of the contents by means of the aspirator. The normal hydatid cyst contains a clear limpid fluid, of alkaline or neutral reaction, having a specific gravity of 1007 to 1011, containing neither albumen nor urea, but a large quantity of chlorides; and if carefully examined by means of the microscope, we frequently find either small hydatid cysts or portions of laminated hydatid membrane or hooklets, all of which are characteristic of the parasite.

Should any inflammatory action have taken place in or near the cyst, the fluid is very likely to contain albumen.

But is this means of establishing the diagnosis free from danger? and, if not, what are its dangers, and what are the dangers of not establishing the diagnosis, and as a consequence of adopting no operative treatment? From the quotations in the early part of this paper, it appears that, with due precautions, a fine needle may without probable harm resulting be introduced into any organ of the body—even an aneurism or the heart itself; and in cases of malignant disease I have never seen any harm done by its use.

Still it will be seen from the following tables that the puncture of a hydatid cyst of the liver with a fine trocar has on more than one occasion been followed by rapidly fatal results; but I am not aware that a similar accident has ever followed the use of so fine a needle as is generally used with the aspirator, and, as the fluid is generally quite thin, there is no advantage in using anything but a very fine needle for exploratory purposes; one case, however, given in this paper will show that the fluid is not always of this character.

We will next consider what happens to hydatids that are not treated by operative measures.

They may undergo spontaneous cure, as is proved by finding the remains of hydatids after death in a shrivelled condition, containing hooks and portions of cyst-wall, in cases that have never been operated upon; but as these have not generally been diagnosed or suspected during life, and are of small size, their death is probably due to some chance inflammation in or near the cyst, or to the entrance of bile, due to a communication with a bile-duct.

If spontaneous cure does not take place, the cyst goes on increasing in size, pressing upon, invading, or displacing other organs, till it ruptures in one of the following directions, or causes death by pressure, viz.:—

Into the pleura or lung, giving rise to pneumonia, pleurisy, or empyæma, with or without expectoration of the whole or a portion of the cyst; and this, which is a very common course for hydatids of the liver, often ends fatally.

Into the pericardium, giving rise to rapidly fatal pericarditis.

Into the peritoneum, causing peritonitis, which, if the cyst is large, is generally rapidly fatal; the immediate cause of the rupture being generally an accident.

Through the abdominal parietes or intercostal spaces; but this is rather rare, especially in small cysts, so that by the time this takes place the cyst is of large size, and, as it of necessity takes on suppuration, it is very likely to exhaust the patient.

Into the stomach or intestine. Under these circumstances, the contents of the cyst are generally passed *per rectum;* this is the most favourable course the disease takes. In a case under my care some time ago, a patient who had been suffering for some time from a large fluctuating tumour in the region of the liver, supposed to be hydatid, and who refused all operative measures, was seized during the night with severe pains in the abdomen, and the next morning passed what was described to me as a large quantity of matter, containing what looked like grape-skins; this was accompanied by a marked diminution of the tumour in the region of the liver, and the patient ultimately made a good recovery.

Into the urinary passages, especially if the primary disease is in the kidney—by no means an unusual seat.

Into the biliary passages, as is shown by the finding of bile in the fluid withdrawn by the aspirator ; and there may be biliary colic from the impaction of a small cyst in the common or cystic duct.

Into the portal vein or vena cava inferior.

It may end fatally, by taking on suppuration and giving rise to pyæmia.

It may also give rise to secondary hydatids in the same or other organs.

Now the arguments used against puncture are—

That you may injure the organ in which the hydatid is situated.

That you will probably set up suppuration.

That you may cause sudden death from shock.

That you may puncture an artery, aneurism, bronchus, vein, malignant tumour, intestines, or stomach.

In answer to the first of these objections, Dieulafoy states that he has never seen an accident follow the use of the aspirator, that could fairly and reasonably be attributed to it ; and this is supported by the tables already quoted.

S. Dougan Bird, of Melbourne, states that lung-tissue, and even a bronchus, may be punctured with a fine trocar without risk ; and that this instrument is frequently used as an aid to diagnosis of hydatid disease of the lung, which is so common in that colony that he has himself seen 150 cases.

I have myself seen the aspirator introduced into the alimentary canal without any apparent harm to the patient.

With reference to the puncture of an aneurism or blood-vessel, some years ago, the late Mr. Moore deliberately punctured a thoracic aneurism, and introduced, through the canula of a fine trocar, a quantity of fine wire into the cavity of the aneurism, without any harm to the patient.

As to giving rise to suppuration, the following tables will show that this frequently takes place where no operation has been performed ; so that even in those cases where it follows puncture it must not be concluded that it is always due to the operation.

As regards sudden death from shock, the following tables will show several instances, the most rapidly fatal being No. 14, Table I., in which it was found that a branch of the portal vein had been punctured ; and, in all, it was a fine trocar that was used, and not a very fine needle, such as is here advocated as an aid to diagnosis.

The tables will also show that the highest mortality was among those cases in which no operation was performed.

Having considered the liabilities to danger from rupture in various directions, and the high death-rate among those cases in which no operation was performed, and also considered the dangers attributed to the introduction of a fine needle, I am led to the conclusion that, in all cases of doubt, the needle should be introduced and the diagnosis confirmed ; and the nature of the fluid, if any, ascertained, and the case treated accordingly ; and this I would advocate, whatever be the seat of the supposed tumour.

Now what are the modes of treatment that have from time to time been adopted, and with what results have they been attended ?

They are—

Leaving the case to take its own course unchecked in any way, in the hope that it may undergo spontaneous cure.

To attempt to destroy the parasite by means of drugs administered by the mouth.

To remove the whole or a portion of the fluid by a fine trocar or aspirator, and close the wound.

To remove the fluid by means of a large trocar, and leave a free opening into the sac.

To open the sac, wholly or partially, by means of caustics, so as to secure adhesions to the abdominal parietes.

To treat the case by electrolysis or acupuncture.

With reference to leaving the case to take its own course, or treating it by drugs only, Table 7 shows that of 35 cases there were 7 cures, 23 deaths, and 5 results not given—by far the highest death-rate of any of the tables.

With regard to drugs, Drs. Murchison, Dougan Bird, Harley, and many others are of opinion that they are perfectly useless ; and this is not more than would be expected when it found that, as in cases in the tables, after taking the most readily diffusible drugs, such as iodide of potassium, no trace of them is found in the contents of the cysts.

With regard to the removal of the fluid by large and permanent opening, it is shown by the following tables that it is always attended by prolonged suppuration and often fatal results ; so that it is, in my opinion, desirable to avoid this mode of treatment, if possible.

It is also seen that in a large number of cases the puncture with a fine trocar, and the withdrawal of the whole or a portion of the contents, and closure of the wound will produce the desired effect.

Caustics have no advantage over a large trocar, as they sometimes fail to produce adhesions ; and if the cyst is near the surface we generally have them already formed, and if it is deep seated we have still to puncture the portion of the organ intervening between the parietes and the cyst itself.

As regards the treatment by electrolysis or simple acupuncture, it will be seen from Table VI. that the results are all good ; but it must be borne in mind that the tumours were all of small size, and in young subjects, and hence in a most favourable condition for cure ; but even under these circumstances there was evidence of the escape of a portion of the contents into the peritoneum or pleura in some of the cases, and it will also be seen from Table III. that the contents of the cysts are in some instances more or less purulent at the first puncture. Now should a case of this nature be treated by electrolysis or acupuncture, and a portion of the contents of the cyst be forced into the peritoneal or pleural cavities, I cannot but think that it would, in all probability, be attended by fatal results.

It is not requisite to inject irritants into the sac, as the withdrawal of a portion of the contents is in most instances fatal to the parasite.

We now come to the consideration of the method of treatment by withdrawing the whole or a portion of the contents of the cyst by means of a fine trocar or needle of the aspirator; and the first point to consider is the time for the operation.

Now, as the introduction of a fine needle has been shown to be almost free from danger, and the longer it is delayed the larger does the cyst become, and hence more liable to contain more or less of a purulent fluid, I should advise that as soon as the tumour is fairly felt a fine aspirator-needle should be introduced with a view to establishing the diagnosis, and from the character of the fluid, if any is withdrawn, you can establish not only the diagnosis of hydatid disease, but obtain important information for your guidance in the future treatment of the case.

In the following tables, which contain 267 cases, the nature of the fluid at the first puncture is only given in the first three, which include 155 cases, these being all the cases in which its character at the first puncture is stated. Of these 155 cases there were 106 in which it was clear at the first puncture, and 49 in which it was more or less thick, purulent, or tinged with bile; and it is in this latter class that we find the highest mortality of those cases in which the character of the fluid is stated, namely, in 49 cases there were 26 cures, 20 deaths, and 3 results not given; but in 106 cases in Tables I. and II., in which it is stated to have been clear at the first puncture, there were 86 cures, 17 deaths, and 3 results not given—a far lower per-centage of deaths; and of these 106 cases there is no evidence given that suppuration ever took place in 71 cases, and of these 71 cases there were 58 cures, 11 deaths, and 2 results not given.

Now the inference that I would draw from these figures is that if the fluid, at the time of the first puncture, be quite clear, withdraw the greater part or the whole of it by means of the aspirator, and close the wound; but that if it is thick or purulent at once introduce a large trocar and leave the canula *in situ*, wash out the cavity once or twice daily, and if the opening becomes blocked, dilate it by means of catheters to facilitate the expulsion of the daughter-cysts, of course taking care at no time to distend the cavity by injecting too large a quantity of the antiseptic fluid; it is also advisable to keep the abdomen, if this is the seat of the tumour, well bandaged, as it aids in the contraction of the sac.

And this line of treatment I would advocate whatever be the region of the thorax or abdomen in which the tumour is situated.

There are several cases in Harley's Tables, in which suppuration had taken place, that did not do well till a free opening was made. Of course Table IV., in which the nature of the fluid is not stated, cannot be considered with reference to the advisability of establishing a free opening from the first.

CASE I.

W. R., fireman, U. S. S. Teuton, April 14, 1877, *aged* 45.

Came up from stoke-hole complaining of cramping pains in his abdomen, which he stated had been troubling him on and off for some days. Bowels confined; pulse and temperature normal; no rigors or sweats at night. On careful examination of the abdomen, the lower margin of the liver is found to be irregular; dulness in the right nipple line extends three inches below the normal, extending almost to the umbilicus; the rest of the margin of the liver, both upper and lower, is normal. Over this dull area the abdominal wall is slightly prominent and tender. On relaxing the abdominal muscles, a hard but slightly elastic tumour, the size of a small cocoanut, can be felt. No thrill can be detected, but an indistinct sense of fluctuation can be made out; other organs apparently healthy: patient is emaciated; no jaundice or vomiting, but of a sallow complexion; rest of the surface of the liver appears to be smooth.

History.—No history of malignant disease. He has been a fireman for twenty-five years, and up to the present time has never been off duty for ill-health; but for several months has not felt so well up to his work as usual, and has lost flesh. He has been in the royal mail service, and consequently in the West Indies and Brazils, but has not been laid up with fever.

May 1.—The state of the patient has continued much the same since first note. No rise of temperature has ever been detected; no rigors or night-sweats; no pain in tumour, or vomiting. If there is any change in the tumour, it is slightly larger, and fluctuation more distinct. Sent to Somerset Hospital, Cape Town.

May 28.—On visiting the patient, I was informed that about a week ago he began to complain of rigors and night-sweats, the tumour becoming more tender. On 24th a small puncture was made into the tumour, and pus escaped in a small quantity; trocar withdrawn, and wound closed.

May 26.—Puncture with large trocar and 26 ounces of pus drawn off, containing hydatid cysts, and the wound again closed. He states that he has felt better since the operation. To remain in Hospital.

April 30, 1878.—Letter received from his wife, stating that he died a week after the "Teuton" left Cape Town.

Case II.

E. J., aged 29, *admitted March* 22, 1873.

History.—Has always enjoyed good health, till about six weeks ago, when she began to suffer from pain and a feeling of weight in the right side, which she thinks has since been enlarging.

State on admission.—Chest fairly formed; sibilus over both fronts; hepatic dulness commences two inches below nipple, and measures five and a half inches. In the median line it extends to within half-an-inch of the umbilicus, and is continuous with that of the spleen. Area of cardiac, dulness ill defined; sounds wanting in definition, dulness over the lower half of the right back, rather fine crepitation over the lower half of right back and extreme base of left back.

March 24.—Sweating freely at night.

March 31.—Complains of pain at the base of right lung and in right hypochondriac region, over which friction can be heard as low as the base of the costal cartilages in front.

April 4.—On examination to-day, the liver is found to be much enlarged, extending quite to the umbilicus, and the patient complains of a good deal of abdominal pain. On auscultation, a harsh to-and-fro sound can be heard below and to the left of the umbilicus.

April 5.—Right side of abdomen is found to be an inch and a half larger than the left. Right side of liver can easily be made out, but the left is not so easily defined. Liver has an elastic feeling, but no distinct fluctuation.

April 9.—Right side of abdomen still increasing in size, and the patient has a drawn and anxious expression. Liver punctured with aspirator three inches to the right of median line, and one inch below costal cartilages, and pus discovered, by Mr. Lawson. A large trocar was immediately introduced, and forty-six ounces of very offensive thick pus came away, which contained numerous small hydatid cysts and many pieces of laminated hydatid membrane. An elastic catheter could be passed into the opening to within two inches of its entire length. Cavity washed out with Condy's fluid, and the canula retained *in situ*.

April 10.—Considerable discharge during the night; cavity washed out with carbolic acid.

April 15.—Still considerable amount of discharge. The canula having a tendency to fall out, and its point being directed upwards, it was removed, and the canula of a prostatic trocar introduced in its place. Discharge to-day contained some bile.

Patient continued to make fair progress till April 26, when she had a slight rigor; but the temporary removal of the tube and the withdrawal of a large-sized cyst, which was blocking up the opening, gave great relief.

Numerous cysts came away at different times, and the cavity was washed out daily, the discharge gradually becoming less. The canula was withdrawn, and the wound allowed to close; and on May 13 she was discharged convalescent, the liver not extending below the ribs.

April 13, 1878.—Has continued quite well since her discharge from the Hospital. No tumour to be felt.

CASE III.

G. H., aged 35.

History.—Has always enjoyed good health, with the exception of occasional attacks of pain in the right hypochondriac region, which, on one or two occasions, obliged him to give up work for a day or two, one of which was accompanied by slight jaundice. Has always been of temperate habits. Mother and two maternal aunts died of cancer.

Present state.—He is fairly well nourished. Margin of the liver can be distinctly felt 3 inches below the costal cartilages; and mid-way between the costal cartilages on the right side and the umbilicus are two roundish prominences, an inch and a half in diameter, in both of which obscure fluctuation can be felt. There is no redness or tenderness on pressure. The liver-dulness is not increased upwards, either in front or at the back. No jaundice, and the stools are of a natural colour. No discomfort after food. Thoracic organs appear fairly healthy. Urine 1026, acid. No albumen.

Jan. 20, 1878.—Puncture made with the aspirator in each of the protuberances to a depth of from 3 to 4 inches, when only a few drops of a semi-sanguino-purulent fluid escaped into the aspirator. Operation caused no discomfort, and the patient, who declined any further operative measures, went to work the following day. Fluid examined by Drs. Payne, Buzzard, and Coupland. No trace of laminated membrane or hooklets, or marked cell-growth or degeneration, could be found.

Nov. 5, 1878.—Patient got wet through, and was laid up with an attack of bronchitis. Complains of increased weight in his side, the girth of which has increased an inch; and his breathing became so distressed as to compel him to pass his nights in a chair.

Jan. 16, 1879.—Fluctuation having become more distinct in the above-mentioned prominence, a puncture was made with a small trocar, when only a few drops of purulent fluid escaped into the canula.

Jan. 22.—A large abdominal trocar was introduced, and by means of probes and catheters a large quantity of matter resembling sago pudding was extracted, the quantity of which for a long time daily increased, the opening being, at the same time, steadily increased by means of catheters; and on one occasion the patient thinks as much as two pints escaped at once. So extensive was the cavity that an ordinary catheter could be introduced for its entire length. During this time he was seized with a violent fit of coughing, and expectorated a large quantity of the same sort of material. This condition continued for many weeks, during which time he was wearing a piece of drainage-tube in the wound, but was obliged to wear the end tied up, only opening it to allow the periodical escape of pus, and the cavity to be washed out with an antiseptic. When the wound or the end of the tube was open, he used to breathe through it, and this caused great pain. Many pieces of hydatid membrane escaped in the expectoration and discharge, but no small cysts were ever seen.

Case continued to improve; and at the end of June, 1879, the tube being no longer able to be kept in the wound, and the discharge having almost ceased, it was discontinued, and the wound rapidly closed.

Sept. 14, 1879.—Patient expresses himself as perfectly well. No remains of tumour; liver dulness normal.

Case IV.

F. R., aged 36, *admitted May* 13, 1873.

History.—Was in hospital in 1867 with hydatid cyst in liver, which was punctured, and 148 ounces of fluid withdrawn. After this she continued well till 1869, when she had a return of her old feeling of weight in the hepatic region, which has since steadily increased; and in 1871 she first noticed two small lumps just below the costal cartilages of the right side.

State on admission.—A well-nourished woman. There is marked bulging of the side of the abdomen and thorax. Immediately below the costal arch on the right side is felt a firm resisting body, giving an elastic sensation to the fingers; it is the seat of a dragging pain, and is continuous with the hepatic dulness. Heart's impulse beating in the left axilla; dulness to angle of right scapula behind; bronchial breathing over the dull area to angle of scapula.

May 31.—Trocar introduced just under right costal cartilages, 2 inches to the right of median line, and 6 ounces of clear hydatid fluid drawn off; contained a small quantity of albumen. Patient was very faint after the puncture.

June 28.—Tumour again punctured, and two ounces of blood drawn off.

July 17.—Again punctured, and 2 ounces of pus and blood drawn off. After this the tumour was several times punctured with various-sized trocars, but on no occasion was there any large amount of fluid drawn off. The wound was kept open at different times for several days; but as there never appeared to be a free discharge, it rapidly closed.

Sept. 9.—Wound enlarged by bistoury, the patient having had several rigors, and 30 ounces of offensive fluid drawn off. Cavity washed out daily. She gradually became worse, and died on Sept. 19.

Post-mortem.—The sinus mentioned above was found to pass in an upward and a backward direction, and the liver to extend 5 inches below the costal cartilages. On examining the thorax, the heart was pushed quite over to the left side, and the right lung, which was very much compressed, occupied only the upper part of the right side of the thorax, not extending below the fourth interspace either back or front; the space between the lower part of the lung and the upper surface of the liver, a distance of about 8 inches, was occupied by the remains of an old hydatid cyst, which had destroyed the diaphragm on this side and also the greater part of the right lobe of the liver. It communicated with the exterior by means of the sinus made by the trocar. The opening into the sac, which was near its lower border, was covered by a valve-like fold of the thick fibrous membrane which everywhere lined the cavity.

Below this cyst in the right lobe of the liver, and separated from it by a thick layer of fibrous tissue, was a cyst the size of a duck's egg, containing closely packed shreds of hydatid membrane.

Table showing the number of Cases in each Sex in each of the accompanying Tables.

	Males.	Females.	Sex not given.	Total.
Table I.	35	33	3	71
,, II.	12	23	—	35
,, III.	25	23	1	49
,, IV.	14	13	11	38
,, V.	21	6	3	30
,, VI.	4	5	—	9
,, VII.	19	14	2	35
	130	117	20	267

Table showing the number of Cases in each period of 5 Years from Birth to 75 Years of Age in the accompanying Tables.

Periods of 5 Years.	Tables							Total.
	I.	II.	III.	IV.	V.	VI.	VII.	
Birth to 5 years ...	1	—	—	1	—	2	—	4
5 to 10 ,, ...	4	2	1	2	1	4	—	14
10 ,, 15 ,, ...	5	2	2	2	2	1	1	15
15 ,, 20 ,, ...	9	6	5	—	2	1	4	27
20 ,, 25 ,, ...	9	3	5	1	2	—	1	21
25 ,, 30 ,, ...	9	5	8	7	3	1	3	36
30 ,, 35 ,, ...	12	7	6	4	3	—	4	36
35 ,, 40 ,, ...	4	6	5	1	5	—	5	26
40 ,, 45 ,, ...	5	—	3	1	—	—	3	12
45 ,, 50 ,, ...	5	—	2	3	1	—	2	13
50 ,, 55 ,, ...	—	—	—	1	—	—	3	4
55 ,, 60 ,, ...	—	1	4	2	1	—	2	10
60 ,, 65 ,, ...	—	—	1	1	2	—	—	4
65 ,, 70 ,, ...	—	—	—	—	—	—	—	—
70 ,, 75 ,, ...	—	—	—	—	—	—	1	1
Age not stated ...	8	3	7	12	8	—	6	44
Total	71	35	49	38	30	9	35	267

Table showing the number of Cures and Deaths in each Sex in each of the accompanying Tables.

	Cures.	Deaths.	Result not given.	Total.
TABLE I.				
Males	28	6	1	
Females	29	3	1	
Sex not given ...	1	2	0	
	58	11	2	71
TABLE II.				
Males	11	1	0	
Females	17	5	1	
Sex not given ...	0	0	0	
	28	6	1	35
TABLE III.				
Males	13	10	2	
Females	13	9	1	
Sex not given ...	0	1	0	
	26	20	3	49
TABLE IV.				
Males	12	1	1	
Females	12	1	0	
Sex not given ...	9	0	2	
	33	2	3	38
TABLE V.				
Males	12	9	0	
Females	4	1	1	
Sex not given ...	3	0	0	
	19	10	1	30
TABLE VI.				
Males	4	0	0	
Females	5	0	0	
Sex not given ...	0	0	0	
	9	0	0	9
TABLE VII.				
Males	5	11	3	
Females	2	11	1	
Sex not given ...	0	1	1	
	7	23	5	35
				267

The following is the classification adopted in the accompanying Tables :—

Table I.—Cases punctured by a small trocar and the wound closed, in which there is no evidence that suppuration ever took place.

Table II.—Cases punctured by a small trocar and the wound closed, in which the fluid was clear at the first puncture but subsequently became purulent.

Table III.—Cases punctured by a small trocar, in which the fluid was purulent, thick, or discoloured at the first puncture.

Table IV.—Cases punctured by a small trocar, in which the character of the fluid at the first puncture is not stated.

Table V.—Cases treated by caustics, incisions, or caustics and incisions, an opening of considerable size having been maintained from the first.

Table VI.—Cases treated by electrolysis or acupuncture.

Table VII.—Cases treated by drugs only, not operated upon, not diagnosed during life, or allowed to rupture spontaneously.

NOTES.

In all cases in which at the reference given the quantity of fluid removed is given to a fraction of an ounce, that fraction has been discarded.

In some cases the data given are not all obtained from the reference quoted, as many of the cases are published in several journals and not precisely in the same terms.

Fluid spoken of by the various authors as limpid or hydatid has been considered as clear and non-purulent; and that spoken of as thick or turbid has been considered as purulent.

Cases in which reference is given to other sources than those stated at the beginning of the Tables are cases to which reference is made in one of the sources named, and they are here referred to the original publications.

From the fact that many of the cases in these Tables have already been published in several places, it has not been an easy matter to avoid quoting the same case twice, and should any case have been so quoted it has been unintentional.

Reference has in most instances been made to the physician, and not to the operating surgeon.

The subsequent Tables have been collected from the following sources, viz. :—

Medico-Chirurgical Society's "Transactions," volume 49. Paper by Dr. John Harley on Hydatids of the Liver, with Tables.

"Lectures on Diseases of the Liver," by Dr. Murchison.

"British Medical Journal," since 1866.

"Lancet," since 1866.

"Medical Times and Gazette," since 1866.

Pathological Society's "Transactions," since 1866.

Clinical Society's "Transactions" since 1866.

TABLE I.

Cases punctured by a small trocar, and the wound closed, in which suppuration never took place.

	Sex.	Age.	Treatment.	Amount and Character of Fluid.	Remarks.	Result.	Reference.
1	M.	8	Fine trocar, wound closed	6 oz. clear, chlor., no alb.	Feverish after operation ...	Cure ...	Murchison, p. 94
2	M.	14	Fine trocar, wound closed	23 oz. alk., no alb., clear	No tumour when last seen ...	Cure ...	Phillipson, B. M. J., Oct. 31, 1874
3	M.	16	Aspirator	22 oz. clear, echinocci ...	Vomiting	Cure ...	Bradbury, B. M. J., Nov. 18, 1876
4	M.	24	Fine trocar, wound closed	53 oz. clear, chlor., hooks, no alb.	Still in Hospital, doing well	... ...	Southey, B. M. J., Aug. 6, 1870
5	M.	25	Very fine trocar, wound closed a week later	21 oz. clear, chlor., 10 oz. pale, hooks and alb.	Slight fever after operation ...	Cure ...	Greennow, P. S. T. v. 18
6	M.	27	Fine trocar, wound closed	28 oz. clear	Two rigors after operation ...	Cure ...	Duffin, C. S. T., v. 6
7	M.	28	Repeated aspirations and galvanism	Small quantity, hooks, no pus	Excessive pain after galvanism	Death ...	Evart, B. M. J., Mar. 24, 1877
8	F.	23	Fine trocar, wound closed	114 oz. clear	... ...	Cure ...	McGillivray, Aust. Med. Jour., March, 1867
9	F.	11	Fine trocar, wound closed	18 oz. clear	... ...	Cure ...	McGillivray, Aust. Med. Jour., March, 1867
10	M.	29	Fine trocar, wound closed	16 oz. clear, hooks ...	... ...	Cure ...	Sympson, B. M. J., April 30, 1870
11	M.	34	3 cysts, 3 punct., fine trocar, wound closed	4 oz., 7 oz., 1 oz. clear, no alb., chlor., hooks	Probably 3 distinct cysts ...	Cure ...	Murchison, p. 99
12	M.	34	2 punctures, fine trocar, wounds closed	60 oz. clear, 40 oz. ...	Slight peritonitis after second puncture	Cure ...	Fenwick, B. M. J., July 22, 1876
13	M.	36	Fine trocar, wound closed	16 oz. clear, chlor., no alb.	... ...	Cure ...	Murchison, p. 96

14	M.	40	Pot. iod., small trocar, wound closed	9 oz. clear	Immediately after operation face flushed, pain in face and jaws, vomiting, epileptiform attack, death 5 minutes, punct. branch of portal vein	Death ...	Bryant, C. S. T., v. 11
15	M.	45	Fine trocar, wound closed 1 year after, fine trocar wound closed, paracentesis abdom.	1 dr. clear, no hooks ... 28 oz. hydatid, no alb. ...	Several tumours, died suddenly some weeks after operation. *P. M.* nothing to account for sudden death	Death ...	Murchison, p. 102.
16	M.	46	Exploratory, 2 punct. and injection of iodine	several oz. pale and hooks	Iodism after each injection ...	Cure ...	Skoda, B. M. J., Oct. 10, 1868
17	M.	50	Small trocar, wound closed	64 oz. clear and hydatids	... ...	Cure ...	Johnson, Clin. Soc. Trans., v. 6
18	—	31	Very fine trocar, wound closed	Small quantity clear ...	Faint, vomiting, 20 minutes	Death ...	Martineau, Lancet, Aug. 28, 1875
19	F.	6	Fine trocar, wound closed	14 oz. clear, chlor., no hooks	Tumour much less 3 months after	Cure ...	Murchison, p. 91
20	F.	6	Pot. iod., grooved needle, fine trocar, wound closed	7 oz. clear, no alb., no hooks	Born in Australia	Cure ...	Anstie, Lancet, Aug. 13, 1870
21	F.	14	Kamela electrolysis, 2 aspirations	2 oz. clear	Seen 3 months after operation	Cure ...	Jones, T. & G., April 18, 1874
22	F.	20	Aspirator	10 oz. clear, chlor., no alb.	Blood at end of operation ...	Cure ...	Heaton, B. M. J., Oct, 31, 1874
23	F.	20	Fine trocar, wound closed	4 oz. limpid, hooks ...	Pain, sickness, and urticaria...	Cure ...	Ransom, B. M. J., Sept. 28, 1872
24	F.	21	Fine trocar, inj. filicis maris, wound closed	4 oz. clear, hooks, no alb.	Vomiting and purging after operation	Cure ...	Pavy, Med. Chi. Soc. Trans. Sept. 29, 1866
25	F.	21	Fine trocar, wound closed	13 oz. clear, chlor., no alb., no hooks.	Urticaria tumour still felt ...	Cure ...	Ransom, B. M. J., Sept. 28, 1872
26	F.	23	Aspirator	16 oz. clear, chlor., no alb.	Redness of skin of abdomen and back	Cure ...	Paget, B. M. J., Oct. 31, 1874
27	F.	23	Pot. iod., grooved needle, KHO med. trocar, wound closed.	40 oz. clear, and hooks...	Seen several times after ...	Cure ...	Heaton, B. M. J., April 3, 1869
28	F.	25	Fine trocar, wound closed	40 oz. clear, chlor., no alb.	No tumour 4 years after	Cure ...	Murchison, p. 93
29	F.	26	Fine trocar, wound closed	21 oz. hydatid	Seen 6 months after	Cure ...	Duffin, Clin. Soc. Trans., v. 6

TABLE I.—*continued.*

	Sex.	Age.	Treatment.	Amount and Character of Fluid.	Remarks.	Result.	Reference.
30	F.	29	Fine trocar, wound closed; abdominal trocar and section	1 oz. clear, chlor., no alb.	Hydatid tumours of liver and peritoneum, part removed by Spencer Wells, 9 months after	Death ...	Murchison, p. 106
31	F.	29	Aspirator	6 oz. clear, no alb. ...	Seen some time after... ...	Cure ...	Bradbury, B. M. J., Mar. 15, 1879
32	F.	30	Fine trocar, wound closed	148 oz. clear, chlor. and hooks	Slight fever after operation ...	Cure ...	Greenhow, Path. Soc. Trans., v. 18
33	F.	31	Potassium iod., fine trocar, wound closed	12 oz. clear, no alb., no pot. iod.	Febrile disturbance and ret. ur.	Cure ...	Murchison, p, 89
34	F.	31	Fine trocar, wound closed	20 oz. limpid, chlor., no alb.	Small tumour still to be felt 3 years after	Cure ...	Murchison, p. 93
35	F.	32	Aspirator	16 oz. clear	Vomiting and pain in head after operation	Cure ...	Bradbury, B. M. J., Nov. 7, 1874
36	F.	43	Several tumours, aspirator, several punctures, injection iod.	Clear, chlor., alb., no echin.	... ...	Cure ...	Alexander, Lancet, Feb. 20, 1875
37	M.	5	3 cysts, fine trocar, wound closed	20 oz., 20 oz., 10 oz., clear	3 cysts punc., none refilled ...	Cure ...	McGillivray, Aust. M. J., Mar. 1867
38	M.	6	Fine trocar, wound closed	2 oz. clear	... ...	...	McGillivray, Aust. M. J., Mar. 1867
39	M.	17	Fine trocar, wound closed	70 oz. clear	... ...	Cure ...	McGillivray, Aust. M. J., Mar. 1867
40	M.	18	Fine trocar, wound closed	10 oz. clear	Adelaide Hospital	Cure ...	Whittel, Lancet, Oct. 15, 1870
41	M.	20	Fine trocar, wound closed	45 oz. clear, chlor., hooks	... ...	Cure ...	Scott Orr, Glas. Med. Jour., Jan. 1876
			2 punctures	35 oz., no alb.		... ...	
42	M.	31	Fine trocar, wound closed	A few grammes clear ...	Sudden collapse after operation, no sign of peritonitis, 20 min., reflex paralysis of sympath.	Death ...	Martincau, Lon. Med. Rec., July 23, 1875

43	M.	45	Fine trocar, wound closed, 2 punctures	180 oz. clear ... ... 100 oz.	Second punct. 6 weeks after first Fluid tinged with bile	Cure ...	McGillivray, Aust. M. J., Aug. 1865
44	M.	46	Fine trocar, wound closed	120 oz. clear	... ...	Cure ...	Frerichs, v. 2, p. 268
45	—	—	Fine trocar, wound closed	14 oz. clear	Punctured below umbilicus ...	Cure ...	Hett, Lancet, Feb. 18, 1871
46	F.	19	Fine trocar, wound closed	20 oz. clear	No return 3 years after ...	Cure ...	Harley, No. 17
47	F.	20	Medium trocar, wound closed	60 oz. clear	Seen 6 years after	Cure ...	Harley, No. 6
48	F.	21	Fine trocar, wound closed, injected male fern	4 oz. clear	Slight febrile disturbance, portion of tumour remaining	Cure ...	Harley, No. 34
49	F.	28	KHO and puncture, wound closed	40 oz. clear	Jaundice, rigors, peritonitis, cysts in peritoneum, ascites before operation	Death ...	Harley, No. 32
50	F.	30	2 cysts, fine trocar, wounds closed; 2 and 3 operations, no result	60 oz. clear	Second cyst not punctured, burst into lung; relief for time, death 2 months after operation	Death ...	Harley, No. 15
51	F.	31	Fine trocar, wound closed	12 oz. clear	Slight tympanitis, portion of tumour remaining	Cure ...	Harley, No. 25
52	F.	33	Trocar, size 4 catheter, wound closed	40 oz. clear	No remains 3 months after operation	Cure ...	Harley, No. 20
53	F.	35	Fine trocar, wound closed	4 oz. clear	No return in 3 years	Cure ...	Harley, No. 18
54	F.	36	Trocar, size 3 catheter, wound closed	60 oz. clear	Slight peritonitis	Cure ...	Harley, No. 21
55	F.	—	Fine trocar, wound closed	Small quantity, clear, no alb.	... ...	Cure ...	Harley, No. 12
56	F.	—	Fine trocar, wound closed	80 oz. clear	Refilled for a time	Cure ...	Harley, No. 14
57	F.	—	Medium trocar, wound closed	320 oz. watery	No result given	...	Harley, No. 8
58	F.	—	Exploratory trocar, wound closed	Clear	... ...	Cure ...	Harley, No. 29
59	—	—	Two cysts, one punctured, wound closed	160 oz. watery	Only one cyst, punctured. Much exhausted prior to operation; relieved by operation	Death ...	Harley, No. 9
60	M.	12	Flat trocar, wound closed	30 oz. clear	No constitutional disturbance	Cure ...	Harley, No. 5

TABLE I.—*continued.*

	Sex.	Age.	Treatment.	Amount and Character of Fluid.	Remarks.	Result.	Reference.
61	M.	14	Medium trocar, wound closed	60 oz. clear	... ...	Cure	Harley, No. 7
62	M.	20	Cap. trocar, wounds closed	20 oz. clear	... ...	Cure ...	Harley, No. 37
			Four months after ...	15 oz.			
63	M.	34	Caustics, fine trocar, wound closed	Limpid	Refilled in 3 days; due to tetanus on 25th day	Death ...	Harley, No. 19
64	M.	35	Grooved needle	1 oz. clear	No trace of tumour 3 months after	Cure ...	Harley, No. 26
			Six weeks after, ordinary trocar, wound closed	23 oz. clear			
65	M.	37	Cap. trocar and inj. iod., wound closed	30 oz. clear	Iodism, portion of tumour remained 3 months after, doing well	Cure ...	Harley, No. 27
66	M.	37	Cap. trocar and inj. iod., wound closed	25 oz. clear	Slight rem. 1 month after ...	Cure ...	Harley, No. 33
67	M.	42	Fine trocar, wound closed	12 oz. clear	Very prostrate prior to operation; syncope, collapse, and vomiting. Second cyst contained 9 pints of fluid	Death ...	Harley, No. 16
68	M.	46	Fine trocar, wound closed	20 oz. clear	No bad effects	Cure ...	Harley, No. 36
			6 days after, large trocar, wound closed	No fluid			
69	M.	46	Small trocar, wound closed	120 oz. clear	Rigors and slight febricular disturbance	Cure ...	Harley, No. 22
70	M.	—	Exploratory, wound closed	Clear	Never reappeared	Cure ...	Harley, No. 28
71	M.	—	Ordinary trocar and syringe, wound closed	150 oz. clear	Tumour reduced; liver still large	Cure ...	Harley, No. 1

TABLE II.

Cases punctured by a small trocar, and the wound closed, in which the fluid was clear at the first puncture, but subsequently became purulent.

	Sex.	Age.	Treatment.	Amount and Character of Fluid.	Remarks.	Result.	Reference.
1	M.	18	Aspirator... ... ... Puncture	25 oz., no alb. or hooks, clear 11 oz. thick and alb. ...	No trace of tumour when last seen	Cure ...	Bradbury, B. M. J., Mar. 15, 1879
2	M.	26	Fine trocar, wound closed Several punctures ...	Clear ... ... Purulent	3 cysts besides the one punct. Due to pressure	Death ...	Wiltshire, Lancet, Sept. 1, 1860
3	M.	30	Small trocar, wound closed 4 months after, large trocar, inj. iod.	85 oz. clear, no alb., no hooks 40 oz. turbid	Liver still large	Cure ...	Fearn, B. M. J., Nov. 7, 1868
4	M.	32	Multiple cysts, fine trocar, wound closed 2 months, large trocar, wound open, injection	11 oz. clear ... ... Pus and hydatids	... ...	Cure ...	Johnston, Clin. Soc. Trans., v. 6
5	M.	35	Fine trocar, wound closed 1 month, free opening and injection	24 oz. clear, chlor., no alb. Pus and hydatids	Albuminuria before operation	Cure ...	Bradbury, B. M. J., Oct. 17, 1874
6	M.	36	Aspirator... ... ... 2 months after, aspirator	40 oz. clear ... ... 30 oz. pus-like	Seen several months after ...	Cure ...	Bradbury, B. M. J., Nov. 18, 1876
7	M.	40	Several cysts ... ... Several punctures ...	60 oz. clear ... ... Purulent	Very much discharge ...	Doing well	Richards, Lancet, Sept. 8, 1866
8	F.	18	2 cysts, fine trocar, wound closed	38 oz. clear, chlor., no alb. Suppuration at *P. M.* ...	2 cysts, cirrhosis, and jaundice 1 pus, 1 greenish, 26th day ...	Death	Scott Orr Glas. Med. Jour., Jan., 1876
9	F.	12	Fine trocar, wound closed Free & permanent opening	30 oz. clear ... ... Suppuration	... ...	Cure ...	McGillivray, Aust. Med. J., Mar. 1867
10	F.	8	Fine trocar, wound closed Free & permanent opening	20 oz. clear ... ... Suppuration	Doubtful whether sec. puncture was into same cyst	Cure ...	McGillivray, Aust. Med. J., Aug. 1865

TABLE II.—*continued.*

	Sex.	Age.	Treatment.	Amount and Character of Fluid.	Remarks.	Result.	Reference.
11	F.	14	Aspirator, 2 punctures ... Large trocar, wound open	2 oz. clear ... ... 11 oz. thick	Many cysts, expectorated hydat.	Cure ...	Parson, Lancet, Dec. 20, 1879
12	F.	17	Small trocar, wound closed Trocar, 8 catheter, wound open and enlarged	1 dr. clear, no alb. ... 26 oz. purulent	No bad symptom after free operation	Cure ...	Rees, Path. Soc. Trans., v. 17
13	F.	19	Aspirator, 2 punctures ... Incision and injection ... Drainage-tube	Clear and chlor. ... Sanious	... ...	Doing well	Broadbent, B. M. J., Nov. 30, 1878
14	F.	21	Aspirator... ... ... Aspirator & drainage-tube	60 oz. clear ... ... 180 oz. opaque and yellowish	Several cysts in liver & perit. 48 hours after operation	Death ...	Murchison, p. 100
15	F.	23	Small trocar, wound closed Large trocar and free opening	6 oz. clear ... ... 12 oz. turbid and hydatids	... ...	Cure ...	Brook, Lancet, Feb. 1, 1868
16	F.	25	Fine trocar, wound closed 6 months after, fine trocar	33 oz. clear album. ... 72 oz. turbid	Jaundice after operation ...	Doing fairly	Ransom, B. M. J., Sept. 28, 1872
17	F.	29	2 cysts, fine trocar ... 9 days after, fine trocar	2 dr. hydatid ... ... 23 oz. opalescent, hooks	... ...	Cure ...	Duffin, Clin. Soc. Trans., v. 6
18	F.	32	Fine trocar, wound closed Vienna paste, fine trocar Large trocar and incision	60 oz. limpid ... ... Pus	Rigors and night-sweats. Seen 5 years after	Cure ...	Murchison, p. 97
19	F.	36	Same case, as 32, Table I	... ...	... ...	Death ...	Greenhow & Balding, Paper case IV.
20	F.	39	Fine trocar, wound closed 14 days large trocar, wound open Injections	1 oz. clear ... ... Pus	Vomiting and rigors	Cure ...	Duffin, Clin. Soc. Trans., v. 6
21	F.	39	Kamela, small trocar, wound closed Large troc. & free opening	60 oz. clear, no hooks ... Large quantity offensive	Urine dark green during injection of carbolic acid, seen 1 year after	Cure ...	Sympson, B. M. J., April 30, 1870

22	F.	—	Grooved needle and large trocar, wound open	20 oz. clear		Cure	Humphry, B. M. J., Nov. 7, 1874
			Injections	Suppuration			
23	M.	30	Exp. puncture	Watery	Vomiting and feverish	Cure	Harley, No. 66
			Caustics, incision, injections	35 oz. turbid			
24	M.	31	Capil. trocar, wound closed	12 oz. clear	Liver large 6 months after	Cure	Harley, No. 47
			Many punctures and injections	Turbid and sanious			
			Wound closed after each				
25	M.	31	Exp. trocar, wound closed	38 oz. clear		Cure	Harley, No. 48
			Small trocar	10 oz. pus			
			Free opening	39 oz. pus			
26	M.	36	Small trocar	10 oz. clear	No complication	Cure	Harley, No. 49
			Incision	80 oz. brownish			
27	M.	—	Fine trocar	Clear	Feverish after second puncture	Cure	Harley, No. 46
			Vienna paste and fine trocar	Turbid			
28	F.	8	Cap. trocar	20 oz. clear	Did not do well till free opening	Cure	Harley, No. 67
			Medium trocar				
			Large trocar and incision	Suppuration			
29	F.	17	Incision to peritoneum, flat trocar, wound closed	40 oz. watery	Fever followed puncture Died of phthisis 5 months after operation	Death	Harley, No. 77
			10th day, free opening	Turbid			
30	F.	19	Cap. trocar wound closed	4 oz. clear	Rigors after each puncture	Doing well	Harley, No. 51
			23rd day, free opening	6 oz. fœtid	Seen 2 months after		
31	F.	27	Explor. trocar	80 oz. clear	Vomiting after injections	Cure	Harley, No. 69
			Caustics, incision, injection, free opening	80 oz. reddish			
32	F.	34	Small trocar	160 oz. clear	Feverish till free opening	Cure	Harley, No. 72
			Caustic, incision, free opening	Pus			
33	F.	34	Fine trocar, wound closed	6 oz. clear	Rigors after puncture	Cure	Harley, No. 45
			9 weeks exploratory	6 oz.			
			KHO and medium trocar	10 oz. pus			
			Wound open 24 hours				

TABLE II.—*continued.*

	Sex.	Age.	Treatment.	Amount and Character of Fluid.	Remarks.	Result.	Reference.
34	F.	53	Vienna paste, small trocar Large trocar, injection, free opening	Clear ... ... 70 oz. yellow	Ulceration of intestine ...	Death ...	Harley, No. 74
35	F.	—	Fine trocar	6 oz. clear ... ... Followed by suppuration	... ...	... ...	Quoted in paper by Duffin, Clin. Soc., Trans., v. 6

TABLE III.

Cases in which the fluid was purulent, thick, or discoloured at the first puncture.

	Sex.	Age.	Treatment.	Amount and Character of Fluid.	Remarks.	Result.	Reference.
1	M.	10	Kamela exploratory puncture Aspiration ... ... Free opening	Turbid, pus and blood ... 60 oz. offensive	Probably 2 cysts	Cure ...	Jones, T. & G., Ap. 18, 1874
2	M.	16	Small trocar, wound closed Free opening and injections	7 oz. purulent ... ... 20 oz. pus	Probably 2 cysts ... ... Seen some months after	Cure ...	Bird, T. & G., Feb. 3, 1877
3	M.	17	Pot. iod. hypodermic syringe Free opening and injections	Pus ... ... 50 oz. pus and hydatids	Right lobe of liver almost destroyed	Death ...	Sieveking, Lancet, May 8, 1869

4	M.	24	Exploratory puncture ...	7 oz. containing pus and hooks	More than 1 cyst	Death ...	Murchison, p. 109
			Fine trocar	Few drops thick ...	Passed hydatids per rectum		
			Free opening, followed by hæmorrhage	80 oz. pus			
5	M.	25	Fine trocar, wound closed	8 oz. turbid, chlor, alb. hooks	Pain and sickness after operation	Cure ...	Murchison, p. 95
6	M.	29	Exploratory needle and K.H.O.	Small quantity of pus ...	Peritonitis after operation ... Opened into kidney prior to operation Discharged at own request	Doing well	Barclay, B. M. J., Nov. 7, 1868
7	M.	29	Aspirator, numerous punctures	Small quantity opalescent	Urticaria, discharge from wound contained bile	Death ...	Bradbury, B. M. J., Oct. 24, 1874
			Wound enlarged and left open, injection	22 oz. decomposing, cysts	Opened into lung		
8	M.	35	Aspirator	Thick and offensive ...	... ...	Cure ...	Ramskill, B. M. J., Nov. 14, 1874
			Incision and drainage-tube	60 oz. pus			
9	M.	35	Exploratory puncture ...	No result; trocar too short	Pyæmia	Death ...	Murchison, p. 119
			Puncture...	6 oz. purulent			
10	M.	42	Aspirator, large needle...	170 oz. pus and hooks ...	Seen 7 months after	Cure ..	Bradbury, B. M. J., Sept. 1, 1877
11	M.	47	3 cysts, grooved needle...	Pus	... ...	Cure ...	Fuller, B. M. J., Oct. 18, 1873
			Free openings	Pus and hooks			
12	M.	61	Fine trocar	72 oz. purulent	... ...	Cure ...	Duffin, Clin. Soc. Trans., v. 6
13	F.	13	Exploratory needle ...	Glairy	Had been previously tapped...	Cure ...	Greenhow, Path. Soc. Trans., v. 18
			Medium trocar and drainage-tube	2 oz. pus...	Expectorated pus and hydatids		
14	F.	24	Puncture wound closed 2 days after	1 oz. pus	... ...	Cure ...	Murchison, p. 118
			Incision and drainage-tube	8 oz. pus and hydatids			
15	F.	25	Thompson's trocar ...	10 oz. turbid	Jaundice	.. ...	Duckworth, B. M. J., Aug. 12, 1871
			Aspirator	No result	Discharged at own request		
			Aspirator	4 oz.			

TABLE III.—*continued.*

	Sex.	Age.	Treatment.	Amount and Character of Fluid.	Remarks.	Result.	Reference.
16	F.	27	Aspirator	Pus and hooks	Sickness and hiccough after operation	Death ...	Silver, T. & G., Jan. 11, 1879
			1 month after, aspirator and incision	40 oz. thick pus... ...	Continued discharge of bile		
			Injections				
17	F.	28	Aspirator	Pus	Multiple hydatids ... ... A few days after operation	Death ...	Hayden, B. M. J., Aug. 25, 1877
18	F.	29	Quoted in paper... ...	... ...	... ...	Cure ...	Liveing & Balding, Paper case II.
19	F.	30	Fine trocar, immediately	6 oz. bile and offensive...	Bile-duct enlarged and blocked by cyst	Death ...	Murchison, Path. Soc. Trans., 19
			Large trocar, injection, wound open	8 oz. hydatids and fluid			
20	F.	39	Fine trocar, followed by large trocar	7 oz. viscid pus	Expectorated hydatids ...	Cure ...	Murchison, p. 108
			Canula left in, cavity washed out	Pus			
21	F.	32	Aspirator	Pus	No evidence of tumour when last seen	Cure ...	Paget, B. M. J., Oct. 31, 1874
			Size of trocar increased...	9 oz. purulent			
22	F.	—	2 cysts, aspirator ...	Pus	Tapped 8 years previously ...	Cure ...	Ransom, B. M. J., Sept. 17, 1873
			Fistulous opening formed				
23	M.	45	Quoted in paper... ...	... ...	... ...	Death ...	Balding, Paper case I.
24	M.	35	Quoted in paper... ...	... ...	... ...	Cure ...	Balding, Paper case III.
25	M.	32	Trocar into chest ...	40 oz. yellow grumous ...	Admitted as a case of typhoid	Death ...	Cayley, Path. Soc. Trans., v. 27
			Counter open and drainage-tube	Hydatids and fluid ...	Expectorated hydatids Suffocated by cyst		
26	M.	40	Twice tapped	Chocolate-coloured fluid	Opened into urinary passages	... ...	Maclaran, B. M. J., Feb. 26, 1876
27	F.	15	Large trocar to give temporary relief	248 oz. dirty-brown fluid	Only operated upon with view to temporary relief, tubercle. Died 23rd day	Death ...	Greenhow, Murchison, p. 122

28	F.	36	Fine trocar	37 oz. turbid	2 cysts, burst 11 months after into bowel	Cure ...	Ward, Lancet, April 2, 1870
29	F.	39	Aspirator ... ... Large trocar and free open	1 oz. gelatinous ... ... Very thick and hydatids	Cyst communicated with pleura. Peritonitis and pneumonia	Death ...	Andrew, Lancet, Dec. 4, 1875
30	—	—	Fine trocar; suppuration; free opening	10 oz. milky	... ...	Cure ...	McGillivray, Aust. Med. Jour., Mar., 1867
31	—	—	Medium trocar	31 pints opaque and pus	2 cysts; shock after operation, 5 days after operation	Death ...	Fuller, Clin. Soc. Trans., vol. 6
32	F.	18	Ordinary trocar; wound closed	30 oz. greenish watery ...	Portion of tumour remained 6 months after	Cure ...	Harley, No. 30
33	F.	22	Ordinary trocar; wound open for time	Glutinous	... ...	Cure ...	Harley, No. 52
34	F.	27	Caustics; ordinary trocar; free opening and injections	100 oz. pus	Caustics failed to produce adhesions	Death ...	Harley, No. 73
35	F.	—	Common trocar; wound closed	Many pints pus	Due to abortion	Death ...	Harley, No. 13
36	F.	—	Common trocar; wound closed	Many pints hydatids and thick	... ...	Death ...	Harley, No. 10
37	M.	33	Common trocar ... ... Incision and injections ...	2 drachms pus ... ... 40 oz. pus	... ...	Death ...	Harley, No. 68
38	M.	36	Caustics; ordinary trocar; free opening and injec.	35 oz. pus	... ...	Cure ...	Harley, No. 71
39	M.	42	Trocar ... ... 10 days after, incision and free opening	Pus ... ... 30 oz. purulent	... ...	Death ...	Harley, No. 54
40	M.	56	Medium trocar; wound closed	100 oz. thick	Only under observation 14 days	... ...	Harley, No. 2
41	M.	58	Small trocar ... ... 6 days after	30 oz. turbid ... ... 30 oz.	10 days after operation ...	Death ...	Harley, No. 44
42	M.	59	Small trocar ... ... 7 days after, large trocar and drainage-tube	1 oz. turbid ... ... Small quantity	Slight constitutional disturbance	Cure ...	Harley, No. 53
43	M.	29	Small trocar; permanent opening	390 oz. purulent at last ...	Fluid at last contained considerable bile and pus	Cure ...	Harley, No. 75

TABLE III.—*continued.*

	Sex.	Age.	Treatment.	Amount and Character of Fluid.	Remarks.	Result.	Reference.
44	M.	—	Incision ; large trocar ; wound closed Afterwards free opening...	120 oz. purulent... ... Many pints	Feverish as soon as opening closed	Cure ...	Harley, No. 59
45	F.	16	Caustics ; exp. trocar ; free and permanent opening	Contained bile	... ...	Cure ...	Harley, No. 70
46	Boy	—	Common trocar ; wound closed	240 oz. greenish... ...	Had ascites, general dropsy and orthopnœa prior to operation	Death ...	Harley, No. 11
47	F.	52	Paracentesis	31 pints bile stained, and hydatid cysts	... ...	Death ...	Fuller, Path. Soc. Trans., vol. 20
48	F.	60	Aspirator ; wound closed	6 oz. opalescent	No tumour 2 years after ...	Cure ...	Murchison, p. 94
49	F.	20	Puncture ; suppuration ; free opening	10 oz. blood, pus, and hydatids	... ...	Cure ...	Harley, No. 61

TABLE IV.

Cases in which the character of the fluid at the first puncture is not stated at the reference given.

	Sex.	Age.	Treatment.	Amount and Character of Fluid.	Remarks.	Result.	Reference.
1	F.	9	Small trocar, wound closed 6 months after, cyst in lung	... ...	... ...	Cure ...	Bird, T. & G., Aug. 9, 1873
2	F.	13	2 cysts, fine trocar ...	... ...	... ...	Doing well	McGillivray, Aust. M. Jour., July, 1872
3	F.	23	Fine tro., more than 1 punc.	120 oz. and 114 oz. ...	... ...	Cure ...	Murchison, p. 77

4	F.	28	Fine trocar	... ...	... ...	Cure ...	McGillivray, Aust. Med. J., July, 1872
5	F.	30	Fine trocar	... ...	... ...	Cure ...	McGillivray, Aust. Med. J., July, 1872
6	F.	32	Fine trocar	... ...	... ...	Cure ...	McGillivray, Aust. Med. J., July, 1872
7	F.	33	2 cysts, fine trocar ...	50 oz.	Interval of 6 weeks bct. oper.	Cure ...	Sibson, Lancet, July 18, 1868
8	F.	42	Fine trocar	40 oz.	2 drs. of alcohol injected ...	Cure ...	Murchison, p. 77
9	F.	46	Fine trocar	... ...	... ...	Cure ...	McGillivray, Aust. Med. J., July, 1872
10	—	—	Fine trocar	... ...	... .	Cure ...	Murchison, Tab. I., No. 49
11	—	—	Fine trocar	... ...	... ...	Cure ...	Murchison, Tab. I., No. 50
12	—	Agd.	Had been previously tapped. Declined operation	... ...	Tum. disappeared in 6 weeks	Cure ...	Bird, T. & G., Aug. 9, 1873
13	—	Ch.	Hypodermic syringe, fluid allowed to drain off	... ...	... ...	Cure ...	Sibson, Lancet, July 18, 1868
14	M.	3	Fine trocar, tapped twice	... ...	... .	Cure ...	McGillivray, Aust. Med. J., July, 1872
15	M.	8	Fine trocar	... ...	... ...	Cure ...	McGillivray, Aust. M. J., July, 1872
16	M.	13	Fine trocar, suppuration, free opening	... ...	... ...	Cure ...	McGillivray, Aust. M. J., July, 1872
17	M.	28	Pot. iod., fine trocar and syringe, wound closed	5 oz.	Pain in back and urticaria ...	Cure ...	Murchison, p. 87
			8 months after, fine trocar, wound closed	20 oz., hooks and chlor., no pot. iod.			
18	M.	27	... ...	5 or 6 defunct hydatids ...	Left Hospital in a week ...	... ...	Page, B. M. J., Nov. 7, 1868
19	M.	27	Fine trocar	... ...	... ...	Cure ...	McGillivray, Aust. M. J., Aug., 1865
20	M.	32	Fine trocar	... ...	... ...	Cure ...	McGillivray, Aust. M. J., July, 1872
21	M.	49	Fine trocar	... ...	... ...	Cure ...	McGillivray, Aust. M. J., July, 1872

TABLE IV.—*continued.*

	Sex.	Age.	Treatment.	Amount and Character of Fluid.	Remarks.	Result.	Reference.
22	M.	49	Fine trocar; tapped 3 times, suppuration	... ...	... ...	Cure ...	McGillivray, Aust. M. J., July, 1872
23	M.	51	Fine trocar, tapped twice	... ...	... ...	Cure ...	McGillivray, Aust. M. J., July, 1872
24	M.	56	Fine trocar	30 oz. and 20 oz. ...	Second puncture 2 weeks after first	Cure ...	McGillivray, Aust. M. J., Aug., 1865
25	M.	59	Fine trocar	... ...	... ...	Cure ...	McGillivray, Aust. M. J., July, 1872
26	M.	61	Fine trocar; suppuration free, and per. open	... ...	... ...	Cure ...	McGillivray, Aust. M. J., July, 1872
27	M.	31	More than one puncture	160 oz. each puncture ...	Due to rupture into lung ...	Death ...	Harley, No. 35
28	F.	26	Caustics, fine trocar ...	16 oz.	Fever after second puncture...	Cure ...	Harley, No. 76
			Incision free, open, and injection	25 oz.			
29	F.	30	Small trocar, wound closed	30 oz.	No evidence of return 8 months after	Cure ...	Harley, No. 3
30	F.	40	Explor. trocar, wound closed; inject. of alcohol	40 oz.	No trace of tumour 3 months after	Cure ...	Harley, No. 31
31	F.	—	Free opening at first ...	... ...	Died quickly	Death ...	Harley, No. 65
32	—	—	Exp. trocar wound closed; more than 1 punct.	2 oz.	... ...	Cure ...	Harley, No. 40
33	—	—	More than 1 puncture, wounds closed	2 oz.	Cyst continued to grow ...	... ...	Harley, No. 42
34	—	—	Explor. trocar, more than 1 punct., wounds closed	2 oz.	Cyst continued to grow ...	... ...	Harley, No. 43
35	—	—	Wound closed	... ...	... ...	Cure ...	Harley, No. 23
36	—	—	Wound closed	... ...	... ...	Cure ...	Harley, No. 24
37	—	—	Exp. trocar, more than 1 punct., wounds closed	2 oz.	... ...	Cure ...	Harley, No. 41
38	—	—	Exp. trocar, more than 1 punct., wounds closed	2 oz.	... ...	Cure ...	Harley, No. 39

TABLE V.

Cases treated by caustics, incisions, or caustics and incisions, an opening of considerable size having been maintained from the first.

	Sex.	Age.	Treatment.	Amount and character of fluid.	Remarks.	Result.	Reference.
1	F.	29	Incision to peritoneum ... 3rd day into cyst	20 oz. clear	Abdominal pain	Cure ...	Harley, No. 88
2	F.	31	Large trocar, free opening	16 pints pus	Fistula for 12 months ...	Cure ...	Harley, No. 58
3	F.	40	Vienna paste, 7 applications	5 pints pus	... ...	Cure ...	Harley, No. 91
4	M.	25	Vienna paste and rupture	105 oz. clear	... ...	Death ...	Harley, No. 63
5	F.	47	Incisions, 2 stages, injections	Sero-purulent	... ...	Death ...	Harley, No. 86
6	F.	62	Puncture and permanent opening	80 oz. offensive	Only under observation 4 days	... ...	Harley, No. 62
7	F.	—	Incisions through thorax and diaphragm in stages	... ...	... ...	Cure ...	Herr Mart, B. M. J., May 10, 1879
8	—	—	Incisions	.. ..	... ...	Cure ...	Harley, No. 90A
9	—	—	Incision through thorax and diaphragm	... ...	Previously punctured... ...	Cure ...	Herr Genzner, B.M.J., May 10, 1879
10	—	—	Incision under spray ... Cyst stitched to abdominal wall	... ...	Cyst evacuated under spray...	Cure ...	Sanger, T. and G., April 7, 1877
11	M.	10	Large trocars, permanent opening	... ...	... ...	Cure ...	Harley, No. 57
12	M.	12	Incision and permanent opening, suppuration	8 oz. clear	... ...	Cure ...	Harley, No. 55
13	M.	15	Caustics, punct. and permanent opening	10 oz. limpid	Vomiting and slight erysipelas	Cure ...	Harley, No. 50
14	M	18	Explor. punct. and incision, permanent open.	Serous	Under observation for 2 months	Cure ...	Harley, No. 90

TABLE V.—*continued.*

	Sex.	Age.	Treatment.	Amount and Character of Fluid.	Remarks.	Result.	Reference.
15	M.	20	Caustics two applications per. open. and injections	10 pints	No bad symptoms	Cure	Harley, No. 92
16	M.	24	Explor. punct. and caustics	9 pints	Hæmorrhage into cyst	Death	Harley, No. 94
17	M.	28	Incision	Limpid	Expectorated hydatids	Cure	Harley, No. 78
18	M.	29	Trocar and per. opening and injections	19 pints clear	...	Cure	Harley, No. 75
19	M.	33	Caustics, incision, and per. opening and inject.	20 oz. limpid	Watched for 11 months	Cure	Harley, No. 89
20	M.	35	Incision and per. opening	Sero-purulent	...	Death	Harley, No. 87
21	M.	36	Incision and per. opening	12 pints	...	Cure	Harley, No. 80
22	M.	37	Incision and canula	9 pints bloody serum	...	Death	Harley, No. 79
23	M.	38	Caustics and incision, permanent opening	10 oz. turbid	Unsatisfactory till free opening	Cure	Harley, No. 64
24	M.	38	Puncture and poultice	160 oz. purulent	Tenderness over tumour	Death	Harley, No. 60
25	M.	56	Grooved needle, caustics, and inc., per. opening	Viscid	...	Cure	Harley, No. 56
26	M.	62	Incision	Pus	Only lived 3 days	Death	Harley, No. 85
27	M.	—	Incision	Hydatids	Lived 5 days	Death	Harley, No. 83
28	M.	—	Incision	40 oz. limpid	Hiccough and vomiting; lived 3 days	Death	Harley, No. 84
29	M.	—	Incision	Vesicles	Lived 1 year	Death	Harley, No. 82
30	M.	—	Incision	Vesicles	...	Cure	Harley, No. 81

TABLE VI.

Cases treated by Electrolysis or Acupuncture without previous Exploration.

	Sex.	Age.	Treatment.	Amount and Character of Fluid.	Remarks.	Result.	Reference.
1	F.	7	Electrolysis for 20 minutes	Slight pain after operation	No tumour to be felt when last seen	... ...	Fagge, Med. Chi. Soc. Trans., v. 54
2	M.	17	Electrolysis 25 minutes...	Slight pain after operation Fluid in right chest	No tumour to be felt when last seen	... ...	Fagge, Med. Chi. Soc. Trans., v. 54
3	M.	13	2 tumours; electrolysis, 1868 Afterwards punctured, 1871	Sickness from chloroform; urticaria	Slight trace of tumour two years after	... ...	Phillips, Med. Chi. Soc. Trans., v. 54
4	M.	4	2 cysts; electrolysis 10 minutes	Slight fluctuation in abdomen	Tumour decreased 21 months after	... ...	Rees, Med. Chi. Soc. Trans., v. 54
5	F.	7	Multiple cysts; electrolysis, 12 minutes one cyst; 12 day electrolysis other cyst	Vomiting from chloroform; fluctuation in abdomen after both punct.	Obscure fulness when last seen	... ...	Fagge, Med. Chi. Soc. Trans., v. 54
6	F.	9	Electrolysis for 10 minutes	Scarlatinoid rash; fluid in abdomen	Tumour disappeared 8 months after	... ...	Fagge, Med. Chi. Soc. Trans., v. 54
7	M.	5	Electrolysis 20 minutes...	No fluctuation of abdomen	Still trace of tumour 17 months after	... ...	Fagge, Med. Chi. Soc. Trans., v. 54
8	F.	27	Electrolysis 16 minutes...	Slight pyrexia; no fluctuation of abdomen	Tumour decreased 9 months after	... ...	Wilks, Med. Chi. Soc. Trans., v. 54
9	F.	9	Simple acupuncture 5 minutes	No fluctuation of abdomen	Tumour decreased when last seen	... ...	Playfair, Med. Chi. Soc. Trans., v. 54

TABLE VII.

Cases treated by Drugs only; not operated upon, not diagonised during life, or allowed to rupture spontaneously.

	Sex.	Age.	Treatment.	Amount and Character of Fluid.	Remarks.	Result.	Reference.
1	—	Boy	No operation; admitted for ascites	Paracentesis	Cyst not punctured	Cure	Green, B. M. J., Oct. 6, 1877
2	M.	30	No operation; ruptured into peritoneum	Paracentesis	Expectorated hydatids	Cure	Potain, Lancet, Jan. 25, 1879
3	M.	56	No treatment given	...	...	Cure	Murchison, p. 130
4	—	—	No treatment given	...	...	...	Jenner, B. M. J., Oct. 28, 1876
5	M.	40	Rupture	...	No wound 6 years after	Cure	Harley, No. 98
6	F.	20	Rupture	Clear	...	Cure	Harley, No. 93
7	F.	42	Rupture	Gelatinous	Fistula many years	Death	Harley, No. 96
8	F.	50	Rupture	Pus	...	Death	Harley, No. 95
9	F.	53	Rupture 29 years before death	Purulent	Calcareus degeneration	...	Harley, No. 99
10	F.	—	Rupture	12 pints	...	Death	Harley, No. 97
11	—	—	Rupture	...	Sloughing of abdominal wall.	Death	Harley, 100
12	M.	16	No operation	...	Numerous cysts in liver and attached to other organs	Death	Logan, Path. Soc. Trans., v. 16
13	M.	19	No operation	...	Burst into lung; secondary abcesses in liver	Death	Pollock, Path. Soc. Trans., v. 16
14	M.	27	No operation; admitted in a state of coma	...	Cyst suppurating on admission	Death	Murchison, p. 120
15	M.	33	No operation	...	Hydatids passed per rectum; lived 1 year	Death	Murchison, p. 129
16	M.	35	Refused all treatment	...	...	...	Smith, T. & G., Oct. 12, 1872
17	M.	35	No operation	...	Several cysts in liver and other organs	Death	Legge, Path. Soc. Trans., v. 25

18	M.	36	Two tumours communicating with pleura and stomach ; no operation	... ...	... ...	Death ...	Russell, T. & G., April 26, 1873
19	M.	36	No operation	... ...	Hydatids passed per rectum...	Cure ...	Whateley, Path. Soc. Trans., v. 26
20	M.	36	Not diagnosed during life	... ...	Due to small pox	Death ...	Murchison, Path. Soc. Trans. v. 18
21	M.	49	Supposed to be ascites ...	15 pints...	Cirrhosis and cancer	Death ...	Silver, Path. Soc. Trans., v. 25
22	M.	53	Leeches; no operation ...	... ...	Hydatids passed per rectum...	Death ...	Murchison, Path. Soc. Trans., v. 16
23	M.	54	No operation	... ...	Burst into pleura	Death ...	Murchison, p. 124
24	M.	72	No operation	... ...	In liver (?)	Death ...	Murchison, p. 125
25	M.	—	Not diagnosed during life	... ...	... ...	... ...	Legg, B. M. J., Feb. 7, 1874
26	M.	—	Not diagnosed during life	... ...	... ...	... ...	Hamilton, B. M. J., Dec. 14, 1872
27	F.	14	Potass. iod.	... ...	Seen 1 year after	Cure ...	Fox, B. M. J., May 13, 1871
28	F.	17	Not diagnosed during life	... ...	Burst into pleura	Death ...	Murchison, p. 123
29	F.	21	No operation	... ...	Pus in urine ; not in Hospital	Death ...	Murchison, p. 125
30	F.	27	Opiates ; no operation ...	... ...	Admitted with peritonitis ...	Death ...	Johnson, T. & G., Jan. 1, 1876
31	F.	33	No operation	... ...	... ...	Death ...	Murchison, p. 114
32	F.	40	No operation	... ...	Hydatids of other organs ...	Death ...	Murchison, p. 129
33	F.	45	No operation	... ...	Hydatids of liver and omentum	Death ...	Murchison, p. 128
34	F.	45	No operation	... ...	Hydatids of other organs ...	Death ...	Murchison, p. 127
35	F.	60	No operation	... ...	Hydatids passed per rectum...	Death ...	Holden, B. M. J., July 10, 1869